

WHAT IS CLAIMED IS:

1 1. An adapter comprises:
2 a member including appropriate mating fittings to allow the member to connect to a
3 interconnect that interfaces a battery or a source of fuel to a fuel cell system for powering an
4 electronic device.

1 2. The adapter of claim 1 wherein the appropriate mating fittings on the member
2 include a pair of spaced battery terminals and an aperture to receive an ingress port on a fuel
3 cell interconnect.

1 3. The adapter of claim 1 wherein the member includes electronics to convert
2 power incident at an input of the adapter to an output power level at the pair of spaced battery
3 terminals.

1 4. The adapter of claim 1 wherein the member includes a wire coupled to an
2 electronic plug.

1 5. An adapter comprises:
2 a first member including appropriate mating fittings to allow the member to connect
3 to a interconnect that interfaces a source of fuel to a fuel cell system;
4 a second member having electronics to convert power incident at an input of the
5 adapter to an output power level at the pair of spaced battery terminals of the member; and
6 a first pair of wires coupled between an input of the first member and output of the
7 second member; and
8 a second pair of wires coupled from an input of the second member to an electronic
9 plug.

1 6. The adapter of claim 5 wherein the member includes a wire coupled to an
2 electronic plug.

1 7. The adapter of claim 5 wherein the appropriate mating fittings on the member
2 include a pair of spaced battery terminals and an aperture to receive an ingress port on a fuel
3 cell interconnect.

1 8. The adapter of claim 5 wherein the member includes electronics to convert
2 power incident at an input of the adapter to an output power level at the pair of spaced battery
3 terminal.

1 9. The adapter of claim 6 wherein the member includes electronics to convert
2 power incident at an input of the adapter to an output power level at the pair of spaced battery
3 terminal.

1 10. A hybrid power supply comprises:
2 an interface between a fuel cell system and a fuel cartridge or battery; and
3 a switching type DC/DC boost type converter coupled to the interface and which
4 receives energy from a fuel cell or from an external battery connected to the interface, and
5 which is arranged to deliver the energy to a rechargeable cell, the DC/DC converter
6 configured to provide substantially constant current drain from the fuel cell.

1 11. The hybrid power supply of claim 1, further comprising:
2 a circuit disposed to sense when a voltage is present across terminals of the interface
3 to cause power to be supplied to rechargeable battery from an external battery when the
4 external battery is present or from a fuel cell when the battery is not present.

1 12. The hybrid power supply of claim 11 wherein the circuit includes a diode
2 coupled between an output terminal of the fuel cell and a terminal of the interconnect that
3 connects an external battery to the hybrid supply.

1 13. The hybrid power supply of claim 11 the circuit includes:
2 a first transistor biased through a resistor to conduct power from the fuel cell to a
3 load; and

4 a second transistor arranged where if an external battery is inserted, the gate voltage
5 of the first transistor turns the transistor off, preventing connection of the fuel cell to the
6 battery, and the second transistor is biased through a second resistor to conduct power from
7 the battery to the load.

1 14. The hybrid power supply of claim 11, further comprising:
2 a circuit including a fuel cell current control that senses fuel cell current, and controls
3 in part operation of the converter to provide constant current discharge on the fuel cell side of
4 the hybrid power supply.

1 15. A hybrid power supply comprises:
2 a fuel cell;
3 an interface between the fuel cell and a fuel cartridge or external battery; and
4 a switching type DC/DC boost type converter that receives energy from the fuel cell
5 or an external battery connected to the interface and is arranged to deliver the energy to a
6 rechargeable cell;
7 a fuel cell current sensor/comparator, included in a feedback control loop disposed
8 about the DC/DC converter, which controls in part operation of the converter to provide
9 constant current discharge on the fuel battery side of the hybrid power supply.

1 16. The hybrid power supply of claim 15, further comprising:
2 a fuel cell current sensor/comparator draws a constant current that is about equal to an
3 optimal level of current to draw from the fuel cell to maximize fuel efficiency.

1 17. The hybrid power supply of claim 15 wherein the hybrid power supply is
2 configured so that the fuel cell provides just above expected average power consumption for
3 a particular application, and the rechargeable battery provide peak power requirements.

1 18. The hybrid power supply of claim 15 wherein the rechargeable cell is Li-Ion
2 or Li-Polymer rechargeable cell.

1 19 The hybrid power supply of claim 15 wherein the circuit delivers an output
2 voltage that corresponds to about 90% charge of the rechargeable cell.

1 20. A hybrid power supply comprises:
2 a fuel cell;
3 an interconnect that can receive a fuel cartridge, a battery, or a power adapter;
4 a rechargeable cell;
5 a DC/DC boost type converter that receives energy from the fuel cell, battery or
6 adapter, and is arranged to deliver the energy to the rechargeable cell.

1 21 The hybrid power supply of claim 21 wherein a diode is coupled between the
2 fuel cell and an external battery terminal of the interconnect that receives a battery or the
3 power adapter, such that when the fuel cell supplies the power, the diode is forward biased,
4 and the external battery terminals are at open circuit and if an external battery or power
5 adapter is connected to the contacts the diode is reverse biased, and the battery supplies
6 power to the load.

1 22. The hybrid power supply of claim 21 wherein the diode prevents charging of
2 the fuel cell from the battery or power adapter.

1 23. The hybrid power supply of claim 21 wherein the dc-dc converter is coupled
2 across the external battery terminals.

1 24. The hybrid power supply of claim 21 wherein the dc-dc converter is a step-up
2 (boost) DC/DC converter to provide optimal operation for the fuel cell.

1 25. The hybrid power supply of claim 24 wherein the circuit includes:
2 a first transistor biased through a resistor to conduct power from the fuel cell to a
3 load; and
4 a second transistor arranged where if an external battery is inserted, the gate voltage
5 of the first transistor turns the transistor off, preventing connection of the fuel cell to the

- 6 battery, and the second transistor is biased through a second resistor to conduct power from
- 7 the battery to the load.